ADB Airfield Solutions

User Manual

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Retain for future use.

L-850C(L) and L-850D(L) Style 2 LED Runway Edge and Runway Threshold and Runway End Light

IREL

FAA: L-850C(L) and L-850D(L) AC 150/5345-46 (Current Edition) and the FAA Engineering Brief No. 67 “Light Sources other than Incandescent and Xenon for Airport Lighting and Obstruction Lighting Fixtures.” ETL Certified.

ICAO: Runway Edge: Annex 14, Vol. I, par. 5.3.9.7 and 5.3.9.10; Fig. A2-9 for 45 m runways Runway End: Annex 14, Vol. I, par. 5.3.11; Fig. A2-8. (Unidirectional red only)

T/C: Runway Edge: Transport Canada TP 312 par. 5.3.10 and Appendix B, Figure B-10 for 45 m runways Runway End: Transport Canada TP 312 par. 5.3.12. and Appendix B, Fig. B.1.9.

Military: Runway Edge: Photometry complies with UFC 3-535-01 Fig. 4-2 for runways less than 200 feet (60 m) wide.

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1.0 Safety

This section contains general safety instructions for installing and using ADB Airfield Solutions equipment. Some safety instructions may not apply to the equipment in this manual. Task- and equipment-specific warnings are included in other sections of this manual where appropriate.

1.1 To use this equipment safely:

WARNING

Read installation instructions in their entirety before starting installation.

- Refer to the FAA Advisory Circular AC 150/5340-26, Maintenance of Airport Visual Aids Facilities, for instructions on safety precautions.
- Observe all safety regulations. To avoid injuries, always disconnect power before making any wiring connections or touching any parts. Refer to FAA Advisory Circular AC 150/5340-26.
- Become familiar with the general safety instructions in this section of the manual before installing, operating, maintaining or repairing this equipment.
- Read and carefully follow the instructions throughout this manual for performing specific tasks and working with specific equipment.
- Make this manual available to personnel installing, operating, maintaining or repairing this equipment.
- Follow all applicable safety procedures required by your company, industry standards and government or other regulatory agencies.
- Install all electrical connections to local code.
- Use only electrical wire of sufficient gauge and insulation to handle the rated current demand. All wiring must meet local codes.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Protect components from damage, wear, and harsh environment conditions.
- Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect components from damage, wear, and harsh environment conditions.
- Allow ample room for maintenance, panel accessibility, and cover removal.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning prior to returning power to the circuit.

1.1.1 Additional Reference Materials:

- NFPA 70B, Electrical Equipment Maintenance.
- NFPA 70E, Electrical Safety Requirements for Employee Workplaces.
- ANSI/NFPA 79, Electrical Standards for Metalworking Machine Tools.
- OSHA 29 CFR, Part 1910, Occupational Health and Safety Standards.
- National and local electrical codes and standards.

1.1.2 Qualified Personnel

The term **qualified personnel** is defined here as individuals who thoroughly understand the equipment and its safe operation, maintenance and repair. Qualified personnel are physically capable of performing the required tasks, familiar with all relevant safety rules and regulations and have been trained to safely install, operate, maintain and repair the equipment. It is the responsibility of the company operating this equipment to ensure that its personnel meet these requirements.

Always use required personal protective equipment (PPE) and follow safe electrical work practices.

1.1.3 Intended Use

WARNING

Using this equipment in ways other than described in this manual may result in personal injury, death or property and equipment damage. Use this equipment only as described in this manual.

ADB Airfield Solutions cannot be responsible for injuries or damages resulting from nonstandard, unintended applications of its equipment. This equipment is designed and intended only for the purpose described in this manual. Uses not described in this manual are considered unintended uses and may result in serious personal injury, death or property and equipment damage. Unintended uses may result from taking the following actions:

- Making changes to equipment that are not recommended or described in this manual or using parts that are not genuine ADB Airfield Solutions replacement parts.
- Failing to make sure that auxiliary equipment complies with approval-agency requirements, local codes and all applicable safety standards.
- Using materials or auxiliary equipment that are inappropriate or incompatible with ADB Airfield Solutions equipment.
- Allowing unqualified personnel to perform any task.

1.1.4 Storage

CAUTION

If equipment is to be stored prior to installation, it must be protected from the weather and kept free of condensation and dust.

Failure to follow this instruction can result in injury or equipment damage.

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1.1.4.1 Operation

WARNING

- Only qualified personnel, physically capable of operating the equipment and with no impairments in their judgment or reaction times, should operate this equipment.
- Read all system component manuals before operating this equipment. A thorough understanding of system components and their operation will help you operate the system safely and efficiently.
- Before starting this equipment, check all safety interlocks, fire-detection systems, and protective devices such as panels and covers. Make sure all devices are fully functional. Do not operate the system if these devices are not working properly. Do not deactivate or bypass automatic safety interlocks or locked-out electrical disconnects or pneumatic valves.
- Protect equipment with safety devices as specified by applicable safety regulations.
- If safety devices must be removed for installation, install them immediately after the work is completed and check them for proper functioning.
- Route electrical wiring along a protected path. Make sure they will not be damaged by moving equipment.
- Never operate equipment with a known malfunction.
- Do not attempt to operate or service electrical equipment if standing water is present.
- Use this equipment only in the environments for which it is rated. Do not operate this equipment in humid, flammable, or explosive environments unless it has been rated for safe operation in these environments.
- Never touch exposed electrical connections on equipment while the power is ON.

1.1.4.2 Material Handling Precautions

CAUTION

This equipment may contain electrostatic sensitive devices.

- Protect from electrostatic discharge.
- Electronic modules and components should be touched only when this is unavoidable e.g. soldering, replacement.
- Before touching any component of the cabinet you should bring your body to the same potential as the cabinet by touching a conductive earthed part of the cabinet.
- Electronic modules or components must not be brought in contact with highly insulating materials such as plastic sheets, synthetic fiber clothing. They must be laid down on conductive surfaces.
- The tip of the soldering iron must be grounded.
- Electronic modules and components must be stored and transported in conductive packing.

1.1.4.3 Action in the Event of a System or Component Malfunction

WARNING

- Do not operate a system that contains malfunctioning components. If a component malfunctions, turn the system OFF immediately.
- Disconnect and lock out electrical power.
- Allow only qualified personnel to make repairs. Repair or replace the malfunctioning component according to instructions provided in its manual.

1.1.4.4 Maintenance and Repair

WARNING

Allow only qualified personnel to perform maintenance, troubleshooting, and repair tasks.

- Only persons who are properly trained and familiar with ADB Airfield Solutions equipment are permitted to service this equipment.
- Disconnect and lock out electrical power.
- Always use safety devices when working on this equipment.
- Follow the recommended maintenance procedures in the product manuals.
- Do not service or adjust any equipment unless another person trained in first aid and CPR is present.
- Connect all disconnected equipment ground cables and wires after servicing equipment. Ground all conductive equipment.
- Use only approved ADB Airfield Solutions replacement parts. Using unapproved parts or making unapproved modifications to equipment may void agency approvals and create safety hazards.
- Check interlock systems periodically to ensure their effectiveness.
- Do not attempt to service electrical equipment if standing water is present. Use caution when servicing electrical equipment in a high-humidity environment.
- Use tools with insulated handles when working with electrical equipment.

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2.0 IREL

L-850C(L) and L-850D(L) Style 2 LED Runway Edge and Runway Threshold and Runway End Light.

2.1 About this manual

The manual shows the information necessary to:

- Install and maintain the IREL Style 2 LED Runway Edge Light.

2.1.1 How to work with the manual

1. Become familiar with the structure and content.
2. Read the Safety Instructions.
3. Carry out the actions completely and in the given sequence.

2.1.2 Record of changes

Page	Rev	Description	Checked	Approved	Date
All	A	Released Manual	DM	ER	9/2012
	B	Updated Warranty			
All	C	Updated and Added the L-850D(L) info	DM	ER	4/01/13
front	D	ETL Certified	JH	ER	5/4/13
10	E	Added the O-ring for shallow base installations	RW	ER	12/5/13
All	F	Install, Maintenance and Parts sections	RW	ER	02/14/14
parts	G	parts and maintenance	RW	JC	7/8/14

2.1.3 Icons used in the manual

For all WARNING symbols see the Safety section.

Carefully read and observe all safety instructions in this manual, which alert you to safety hazards and conditions that may result in personal injury, death or property and equipment damage and are accompanied by the symbol shown below.

WARNING

- Failure to observe a warning may result in personal injury, death or equipment damage.

CAUTION

- Failure to observe a caution may result in equipment damage.

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2.2 Introduction

2.2.1 Compliance with Standards

FAA: L-850C(L) and L-850D(L) AC 150/5345-46 (Current Edition) and the FAA Engineering Brief No. 67 “Light Sources other than Incandescent and Xenon for Airport Lighting and Obstruction Lighting Fixtures.” ETL Certified.

ICAO: Runway Edge: Annex 14, Vol. I, par. 5.3.9.7 and 5.3.9.10; Fig. A2-9 for 45 m runways Runway End: Annex 14, Vol. I, par. 5.3.11; Fig. A2-8. (Unidirectional red only)

T/C: Runway Edge: Transport Canada TP 312 par. 5.3.10 and Appendix B, Figure B-10 for 45 m runways.

Runway End: Transport Canada TP 312 par. 5.3.12. and Appendix B, Fig. B.1.9.

Military: Runway Edge: Photometry complies with UFC 3-535-01 Fig. 4-2 for runways less than 200 feet (60 m) wide.

2.2.2 Uses

L-850C(L)

- Runway edge on category I, II, and III runways
- Military runway edge applications less than 200 feet wide

L-850D(L)

- Runway displaced threshold light (unidirectional green)
- Runway threshold/end (bidirectional red/green)

ICAO & T/C

- Runway edge applications less than 60 m (200 feet) wide
- Runway end (Unidirectional red only)

2.2.3 Features

- Average LED life of 56,000 hours under high-intensity conditions and more than 150,000 hours under typical operating conditions, resulting in significant reduction or even elimination of ongoing maintenance costs and periodic re-lamping expenses.
- For L-850C white runway edge applications, use of LED light source eliminates color shifts at lower CCR step settings. For red, yellow or green runway applications, use of LED light source eliminates fi lter replacement and color shifts when viewed at various angles or CCR step settings.
- FAA Style 2. Low protrusion above ground of 0.50 inch reduces vibrations caused by aircraft landing gear in both light fixture and landing gear, increasing lamp life.
- Can be installed on existing series circuits with no modifications to existing CCR or isolation transformer.
- Operates on either 3- or 5-step ferroresonant or thyristor CCRs that are designed in compliance with IEC or FAA requirements.
- Very low power rating for LED lights contributes to a lower life cycle cost. Limits cost for supporting equipment, such as CCRs, to strict minimum.
- When quartz-incandescent fixtures are replaced with LED fixtures, airport staff can add more lights without increasing CCR size.
- LED photometric performance will be maintained longer due to a cleaner lens. The lower temperature of the lens prevents the “baking effect” that causes contaminants to stick to the surface of the lens.
- LED photometric performance will be maintained longer due to a cleaner lens. The lower temperature of the lens prevents the “baking effect” that causes contaminants to stick to the surface of the lens.
- Offers longer maintenance intervals and requires fewer spare parts, resulting in lower life cycle cost
- “Smart electronics” control current to LED, so light output matches existing incandescent fixtures at all brightness levels without sacrificing any light characteristics. Actual light output is determined based on a continuous light output curve. Therefore, light output truly represents input current, even if series circuit input current is not within FAA

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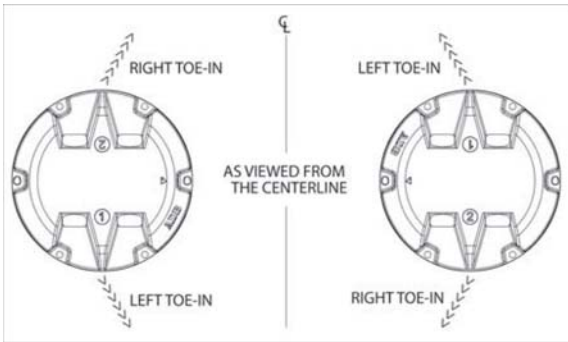
specification limits. Allows for a low cost and progressive evolution of the airfield lighting toward new LED-based technology.

- Unique double-barrier cord set design eliminates risk for water incursion in case the cord set becomes damaged. Cord set can also be easily replaced without opening fi xture.
- Light channel in front of prism windows protects prisms from damage and prevents rubber buildup thereby maintaining optimal light output
- Environment-friendly, precision-cast aluminum alloy cover, optical support, and inner cover assembly with stainless steel hardware
- Low-temperature lights. Temperature rise at center of top cover remains below FAA-specified limit of 320 °F (160 °C).
- Includes a UL 467 rated ground lug, which accepts an AWG 6 earth ground wire
- Rugged lightning protection that complies with ANSI/IEEE C62.41-1991 Location Category C2 given in FAA Eng. Brief 67. Category C2 is defined as a 1.2/50ìS – 8/20 ìS combination wave, with a peak voltage of 10,000 Volts and a peak current of 5,000 Amps

Figure 1: Light Beam Location



NOTE: Triangle embossed on the top cover should point toward the centerline to ensure correct toe-in position.

2.2.4 Dimensions

Outside Diameter:	11.94 in (30.33 cm)
Bolt Circle Diameter (L-868B):	11.25 in (28.58 cm)
Max. Bottom Cover O.D.:	9.94 in (25.25 cm)
Max Bottom Cover O. D.: • 9.92 in (25.20 cm) down to depth of 1.63 in (4.14 cm) • 8.69 in (22.07 cm) from depth of 1.63 in (4.14 cm) to 3.88 in (9.86 cm) Compatible with L-868B Top Sections where the overall height of the Top Section is less than 4 in (10.16 cm).	
Bottom Cover Depth:	3.88 in (9.9 cm)

2.2.5 Packaging

In cardboard box:	7 x 13 x 13 in (17.8 x 33 x 33 cm)
Weight with packing:	18.5 lb (8.4 kg)
Weight without packing:	15.5 lb (7 kg)

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2.2.6 Electrical Supply

It is recommended that the L-850C(L) LED fixture be powered from a dedicated CCR and that separate remote controls are available. IREL LED lights have been designed to work with any IEC or FAA-compliant transformer up to 200 W without affecting the performance or lifetime of the light fixture or transformer. See catalog sheet 1215 for more details on recommended isolation transformers (XF) specified below.

L-850C(L) & L-850D(L)	Fixture Load	Isolation Transformer	Isolation Transformer Load	CCR Load
Without Heater				
Unidirectional	21 VA	30/45 W	8 VA	29 VA
Bidirectional[1]	36 VA	65 W	17 VA	53 VA
Bidirectional[2]	21 VA per side (42 VA total)	30/45 W per side	8 VA per XF	29 VA per side (58 VA total)
With Heater				
Unidirectional	49 VA	65 W	15 VA	64 VA
Bidirectional[1]	64 VA	65 W	13 VA	77 VA
Bidirectional[2]	49 VA per side (98 VA total)	65 W per side	15 VA per XF	64 VA per side (128 VA total)

1 One cord set
2 One cord set per side

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2.3 Installation

WARNING

Read the instructions in their entirety before starting installation.

This section provides installation instructions for the L-850C, IREL Light Fixture.

2.3.1 Input Requirement Summary

The IREL light fixture is designed for connection to a 6.6 A or 20 A series lighting circuit via an L-830 (for 60Hz) or L-831 (for 50Hz) isolation transformer.

2.3.2 Unpacking

Each unit is individually packaged in a durable, cushioned, corrugated cardboard carton. To avoid unnecessary damage to the light assembly, unpack the carton at the installation site.

To unpack the carton, open the flaps, carefully remove the top packing material and remove the fixture. Set the light assembly in a protected area.

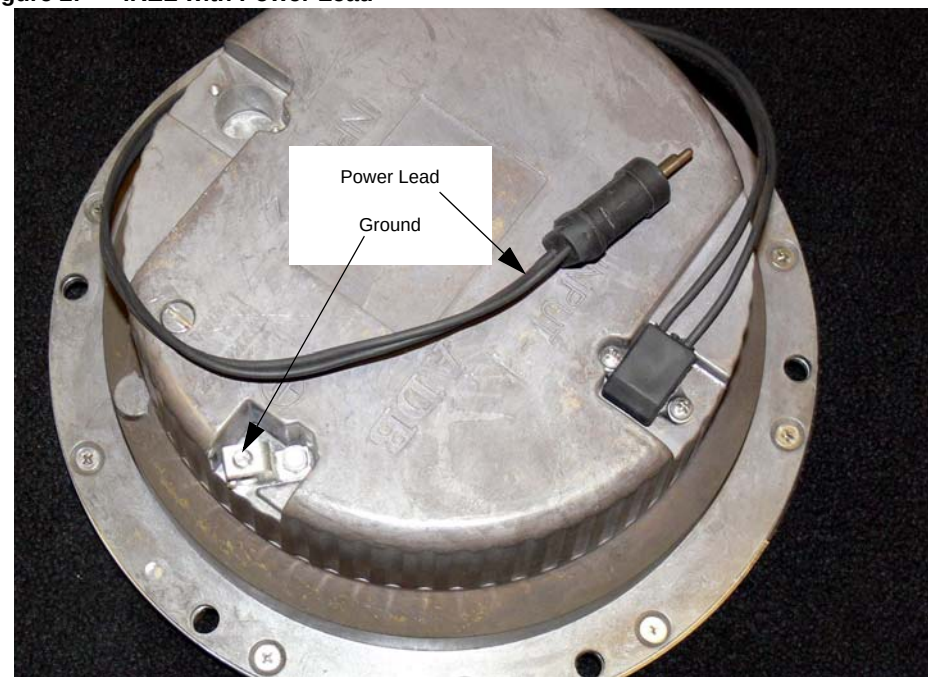
If damage to any equipment is noted, file a claim form with the carrier immediately. The carrier may request to inspect the equipment.

2.3.3 Connection of the Series Transformer and the Light Connectors

1. The 2-pin plug on cable 1 is connected to the socket for the secondary circuit of the series transformer. See Figure 2.

   NOTE: The IREL also may have 2 power leads, one for each side.

Figure 2: IREL with Power Lead



NOTE: All connections should be sealed with self-bonding insulation tape and then covered with electrical tape in accordance with local airport practices. If your airport does not require this, it is highly recommend that you at least wrap the connection with electrical tape.

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2.3.4 Installation on L-868 Base

The light assembly is shipped complete, and ready for installation.

To install the fixture on an L-868 base, see FAA AC 150/5345-30 and the project site-specific plans and specifications for details on L-868 base installation.

NOTE: Mounting bolts are not supplied with the fixture. Mounting bolts and anti-rotation lock washers are normally supplied with the base can or flange ring. If a flange ring is used, the bolt length is 1-1/4" (32mm) plus the thickness of the flange ring.

Also read the following guidelines:

1. Clean the base receptacle. Make sure the base receptacle is completely clean and dry. The mating surfaces must be clean and free of foreign particles.
2. Count out the six fixing bolts and anti-vibration washers required.
3. Fit an appropriate lifting tool into both holes, which are located 180° apart in the cover.

   NOTE: The lifting tool can be made from two 1/2 x 13 eyebolts (1-in. ID) and a 1/2-in. diameter, 16 in. (406mm) long rod or pipe inserted through the eyebolts.

4. If present, lift the old or faulty optical unit out of the base.

CAUTION

Never hold the light fixture by the wires. Doing so may damage the cordset.

5. Carry the new light assembly to the base.
6. Place the light assembly beside the opening in the L-868 base so that the L-823 Power connector can be connected with the mating receptacle from the L-830 or L-831 isolation transformer in the base. Make sure that the connection is solid and secure. Refer to "Electrical Supply" on page 6 for required isolation transformers.

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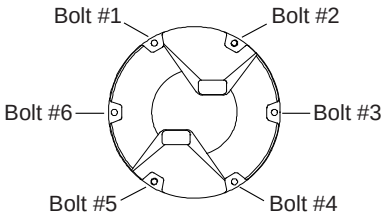
7. Position the light assembly over the L-868 base and set it onto the base. Align the light according to FAA AC 150/5345-30 and project plans and specifications. Make sure items such as spacers and shims are installed on the light base as indicated on site plans, specifications and drawings. Remove the eyebolts and lifting rod.

	WARNING
	Ensure that the cord set wires are NOT pinched between the base can and the fixture. Pinched wires can short the input power, preventing the light from operating properly.

8. If using thread-locking adhesive, apply only one drop of Grade AV Loctite to each of the six 3/8-in. (9.525mm) diameter mounting bolts. Torque the bolts to 185 ±5 in-lb. (20.902 ±0.565 N·m). See “Notes On Torque Sequence” below. If lubricant is used on the bolts, contact the base can manufacturer for recommended torque values.
9. Turn on the power to verify the fixtures illuminate. Operate for a minimum of five minutes in each CCR step setting.

Figure 3: Light Fixture Torque Sequence



Notes On Torque Sequence

1. Always torque the bolts in opposing pairs. To do so, tighten bolts in the following sequence (see figure at right):
   - — If you start with Bolt #1, then tighten Bolt #4
   - — Next tighten Bolts #2 and #5
   - — Then tighten Bolts #3 and #6
2. Applying more than one drop of Loctite to the bolt threads will make the bolts very difficult to remove.

After several re-lampings, threaded holes may accumulate dirt and Loctite. If this occurs, screws may not seat properly. Clean the holes with lightweight oil using a small fiber brush. Wipe the holes clean with alcohol to remove all oil or diesel fuel and dirt. Clean with dry, oil-free, low-pressure air. After a bolt has been retorqued three times, replace it with a new bolt. If a bolt is continuously loose, inspect the tapped thread in the light base flange for damage. If the threads are damaged, contact the ADB Airfield Solutions Sales Department for a field repair insert kit.

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2.3.5 Installation on a Shallow Base

Installing the IREL light fixture on a shallow base involves preparing the pavement recess and wireways, then installing the light fixture on a shallow base.

See FAA AC 150/5345-30 and the project site-specific plans and specifications for details on shallow base installation.

Also follow the applicable instructions in the previous section, “Installation on L-868 Base” on page 8, when connecting, installing and powering the fixture.

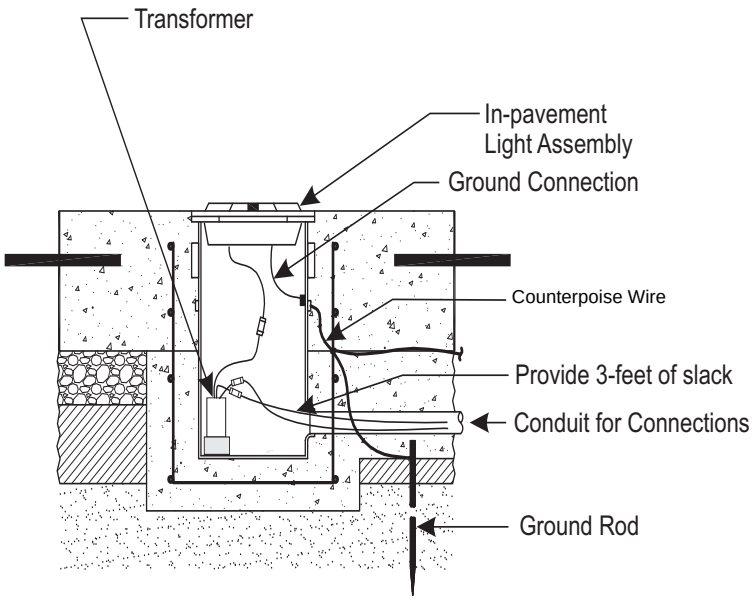
Place an O-ring seal between topcover and shallow base, for F-Range 12" ADB# (7080.90.650)

2.3.6 Earth Ground Connection

Earth ground should be connected to the UL 467 Rated Earth ground screw. The cross-sectional area of the cable should be at least 6 AWG (13.29 mm^2) with a minimum wire length of 48-inches. Some installations will require a 72-inch wire.

NOTE: A braided ground strap may also be used instead of a ground wire.

Figure 4: Base Can Cross-section



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2.4 Troubleshooting

WARNING

Read the instructions in their entirety before starting troubleshooting.

2.4.1 Troubleshooting

Problem	Possible Cause	Corrective Action
Failed LED or internal PCB (short life span)	Input current too high	Check constant current regulator output current levels. Check the label on the isolation transformer and replace if necessary. For example, incorrectly installing a 6.6A/20A transformer will cause very short fixture component life.
	Water in assembly	Inspect the prism. Open light assembly. Clean, dry and inspect light assembly. Replace O-ring. Verify fixture is sealed. See “Cleaning the Light Channel and Prism” on page 13.
Distorted light beam output	Broken, damaged or wrong prism installed. Improper toe on the LED assembly.	Check parts list and install correct prism. Check the toe of the LED assembly. Adjust if necessary.
Water inside optical chamber	Damaged or missing prism seals or top cover O-ring	Replace both prism seals. Replace top cover O-ring. Verify that the fixture is sealed.

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2.5 Maintenance

2.5.1 IREL Maintenance Schedule

Interval	Maintenance Task	Action	Refer to:
Weekly	Check for dirty channel and prism.	Clean channel and prism.	“Cleaning the Light Channel and Prism” on page 13.
Monthly (more often during rainy seasons)	Check for moisture in the light fixture by looking through the lens.	Open up the light fixture if moisture is present. Clean, dry, and inspect the light assembly. Replace the O-ring.	“Opening Optical Unit” on page 15.
Every 60 days (also whenever the light assembly is serviced)	Check for improper torque on hold-down bolts.	Torque the six bolts holding the fixture to the base.	“Retorquing Mounting Bolts” on page 21.
After snow removal	Check for damaged light fixtures.	Replace damaged fixtures. Use a power broom for snow removal, if practical.	Follow recommended snow removal techniques described in FAA AC 150/5200-23.

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2.5.2 Fixture Component Maintenance

WARNING

Turn off the circuit before replacing fixture(s). Failure to observe this warning may result in personal injury, death, or equipment damage.

The preferred method of maintaining the IREL in-pavement high-intensity runway edge light is to periodically and systematically replace the light assembly and return the replaced assembly to the maintenance shop for renovation. As an alternative, you can service the light assembly in the field. It is recommended, however, that field servicing be limited to cleaning lenses and removing moisture.

2.5.2.1 Cleaning the Light Channel and Prism

To clean the light channel and prism, perform the following procedure:

1. Use a suitable fiber brush to remove all accumulated debris from the light channel.
2. Clean the outer surface of the prism using liquid glass cleaner. If the prism is coated with a substance impervious to the cleaner, apply a suitable solvent sparingly with a wad of cotton or a patch of cloth. After the solvent has acted, remove the softened coating with a clean piece of cotton or cloth. Dry the prism with gently, dry, oil-free compressed air at a pressure no greater than 10 psi (69 KN/m2) to evaporate or remove all remaining cleaner.

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2.5.2.2 Lifting Optical Unit Out of Base

There are two methods that can be used to lift the fixture:

Method 1: Use eyebolts to lift the fixture

1. Remove the six mounting bolts and washers.
2. Fit the eyebolts into both threaded holes located (180 degrees apart) in the cover, lift the optical unit out of the base and place the optical unit next to the base.

   NOTE: Lifting Tool is two 1/2 x 13 Eyebolts (1 in. ID) and a 1/2 in. dia. rod/pipe x 16 in. long (placed between the eyebolts).
3. Disconnect the light fixture wires from the power wires coming from the transformer(s).
4. Mount a serviced or new light fixture as described in Installation on L-868 Base in the Installation section.

   NOTE: Torque the six screws to 185 ± 5 in-lb (20.902 ± 0.565 N•m). If lubricant is used on the bolts, contact the base can manufacturer for recommended torque values.
5. Take the in-pavement fixture unit back to the maintenance shop where it can be serviced entirely.

   NOTE: Never hold the light fixture by the wires. This may damage the insulation.

Method 2: Use a lifting tool

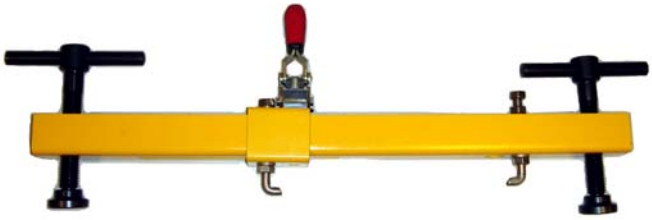
To lift the optical unit out of the base receptacle or adapter ring, proceed as follows:

1. Remove the mounting bolts and washers.

   NOTE: Never hold the light fixture by the wires. This may damage the insulation.
2. Fit the appropriate lifting tool into lifting holes (A) located (180° apart) in the cover. Screw the T-handles down to seperate the fixture from the mounting base. Lift the optical unit out of the base or adapter ring and place it next to it.

Lifting Tool

1411.19.550
Ordered separately



3. Disconnect the light fixture wires from the power wires coming from the transformer(s).
4. Mount a serviced or new fitting. See “Installation on L-868 Base” on page 8.
5. Take the optical unit back to the maintenance shop where it can be serviced entirely.

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2.5.3 Repair Procedures

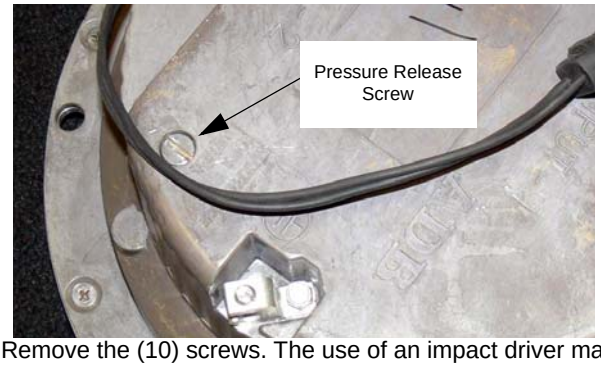
2.5.3.1 Opening Optical Unit

To open the optical unit, perform the following procedure:

1. Turn the light unit upside-down.
2. See Figure 5. Remove the pressure release screw.

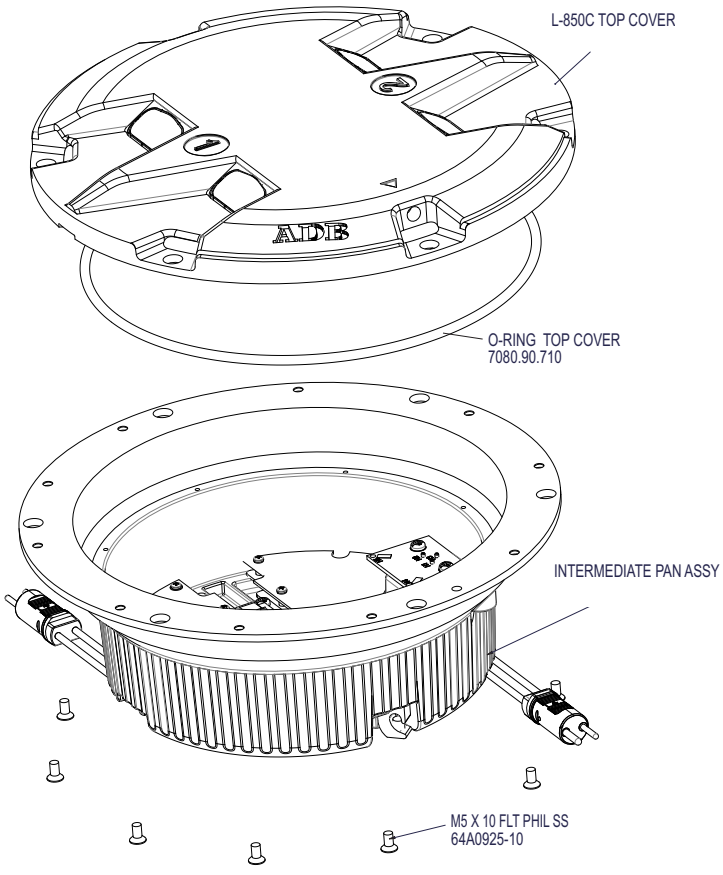
   NOTE: Removing the pressure release screw equalizes the pressure inside and outside the fixture, making it easier to break the seal and remove the inner cover.

Figure 5: Pressure Release Screw



3. See Figure 6. Remove the (10) screws. The use of an impact driver may be required to unlock the screws.

Figure 6: Removing Screws



4. Insert small or medium flat blade screwdriver in the machined recess slot between cover and inner cover and turn it vertically to separate the inner cover from the cover.

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2.5.3.2 Replacing Prism

Table 1: Parts List for Replacing Prism

Part Number	Description	Quantity	Note
4072.18.336	Lens, optical glass	2 or 4	
4072.18.380	Lens Retainer Seal	2 or 4	
4072.18.362	Lens Seal	2 or 4	

To replace the prism, perform the following procedure:

1. See Figure 7. Remove the LED Assembly by removing the four Phillips Head screws.
2. Remove the lens retainer plate and Lens Retainer Seal secured in the inner pan assembly. Also see Figure 18.

Figure 7: Lens Retainer Seal and Lens

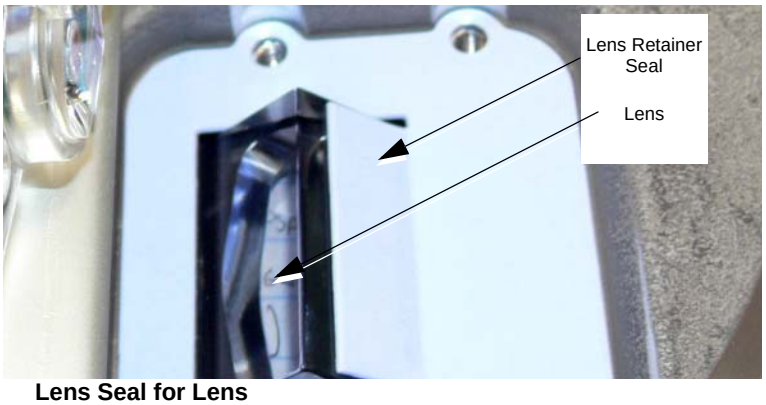
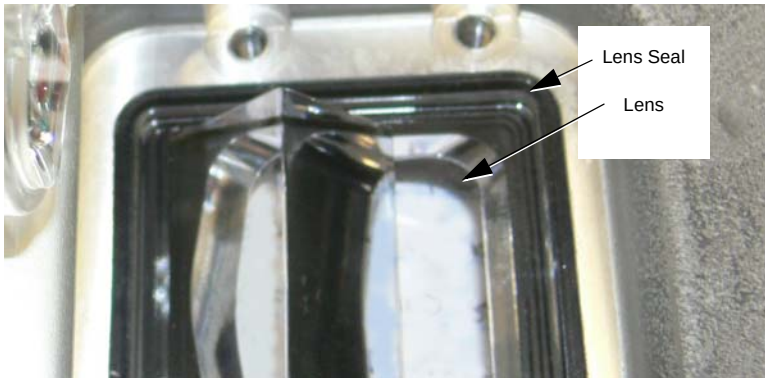


Figure 8: Lens Seal for Lens



3. See Figure 8. Push the Lens with the Lens Seal towards the inside of the cover.
4. Clean and remove grease from the prism chamber with any effective solvent.

   NOTE: Never use any abrasive substance. This will scratch or frost the prism.
5. Apply a thin layer of Dow Corning Molykote 3452 or equivalent in the prism chamber using a small brush.
6. Install a Lens Seal over the Lens
7. Push the Lens and Seal assembly in the lens pocket from the inside and clean the inner surface of the lens.
8. Install a Lens Retainer Seal over the Lens.
9. Reinstall the Lens Retainer Plate hardware with the Phillips pan head screws. Apply a droplet of sealant Loctite 270 to the last threads. Torque to 31 ± 4 inch-pounds (3.5 ± 0.5 N•m).
10. Close the Optical Unit.
11. Test for leaks, see “Testing for Leaks” on page 20.

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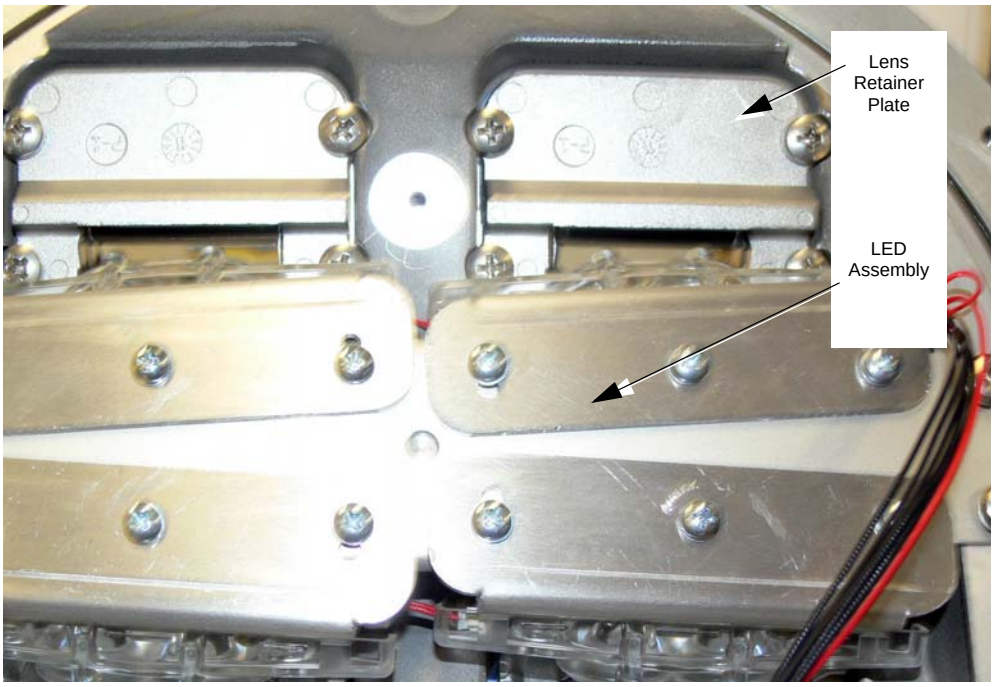
2.5.4 Replacing LED Assembly

Table 2: Parts List for Replacing LED Assembly

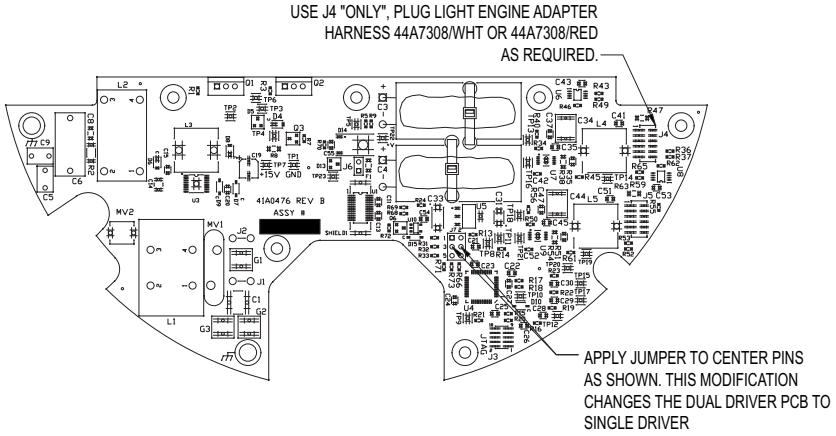
Item	Part Number	Description	Quantity	Note
1	48A0431/WHT /YEL /RED / GRN	LED Light Engine	4	

Figure 9: IREL LED Assembly



1. Open the Optical Unit, see “Opening Optical Unit” on page 15.
2. Disconnect the LED Assembly wires at the PCB by pulling gently upward.
3. Remove the three Phillips Head screws, clean the mounting surface of the top cover.
4. Replace the LED Assembly, attach with three Phillips Head screws, apply a drop of Loctite 242 and torque to 2.5 ± 0.5N·m (22 ± 4 IN-LBS).
5. Connect the LED Assembly to the PCB.
6. Close the Optical Unit.
7. Test for leaks, see “Testing for Leaks” on page 20.

Figure 10: LED Light Engine Connections


USE J4 "ONLY", PLUG LIGHT ENGINE ADAPTER HARNESS 44A7308/WHT OR 44A7308/RED AS REQUIRED.
APPLY JUMPER TO CENTER PINS AS SHOWN. THIS MODIFICATION CHANGES THE DUAL DRIVER PCB TO SINGLE DRIVER

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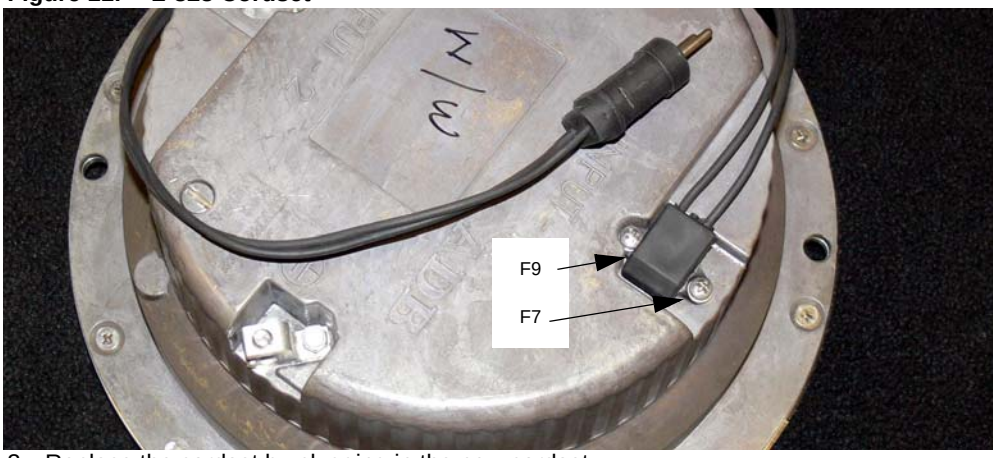
2.5.4.1 Replacing L-823 Cordset

To replace the L-823 cordset, perform the following procedure:

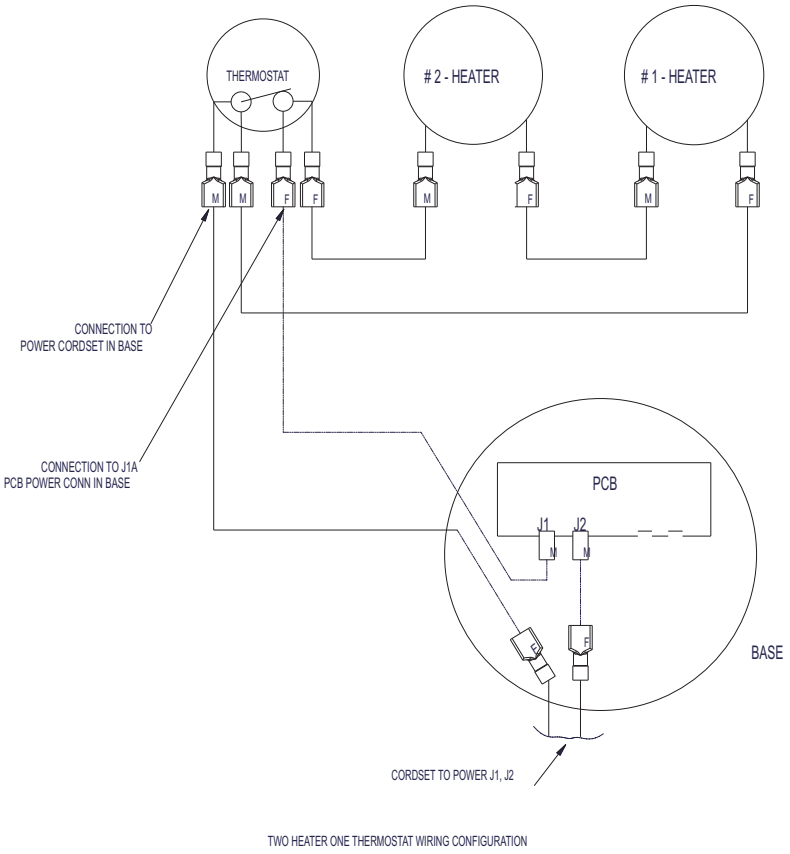
1. See Figure 11. Remove both screws (F7) from the cordset connector (F9).
2. Unplug the cordset assembly.

Figure 11: L-823 Cordset



3. Replace the cordset by plugging in the new cordset.
4. Attach the two screws. Do not use a power screw driver. Compress the cord rubber by no more than 1/32” (0.79 mm).
5. Return the light to service.

Figure 12: IREL LED, Cordset and Light Engine Wiring Diagram



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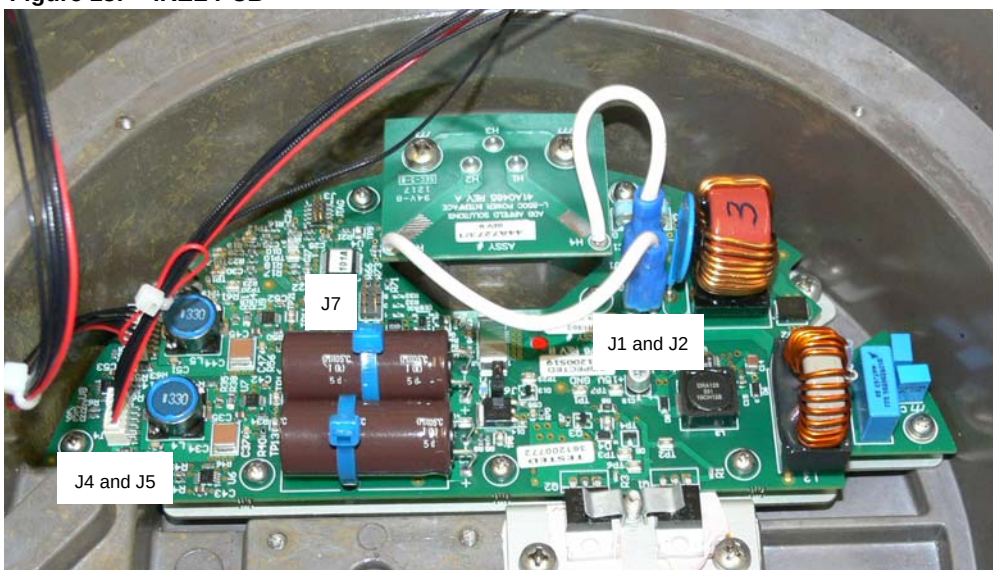
2.5.5 Replacing the PCB

Figure 13: IREL PCB



1. Open the optical unit. Refer to “Opening Optical Unit” on page 15.
2. Disconnect the LED Assemblies from the PCB and disconnect the fast-on connectors J4 and J5.
3. Disconnect the power from J1 and J2.
4. Remove the PCB.
5. Replace the PCB and reconnect all wires.

   NOTE: PCB Is "2-chan" by default; add shunt to J7 pins 3 & 4 to change it to "1-chan". Apply jumper to center pins 3 & 4. This modification changes the dual driver PCB to single driver.

2.5.5.1 Calibration

For L-850C fixtures after replacing the PCB:

1. Insert a jumper between J7 pins 5 and 6.
2. Turn the CCR ON to B1.
3. Turn the CCR OFF.
4. Remove the jumper from the J7.
5. Turn on the CCR to B5 – 6.6A.
6. The light engines will gradually rise at a low intensity.

   NOTE: Observe the light engine brief blinking followed by a gradual rise for a full brightness. (Each light engine will calibrate individually.
   One will be on while the other is off.)
7. Turn the CCR off.
8. Close the unit and, test for leaks, see “Testing for Leaks” on page 20.

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2.5.5.2 Testing for Leaks

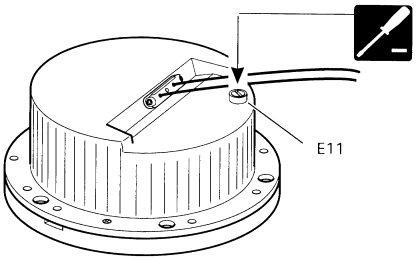
WARNING

The unit must have all its screws installed and correctly torqued prior to pressurizing to 20 psi maximum.

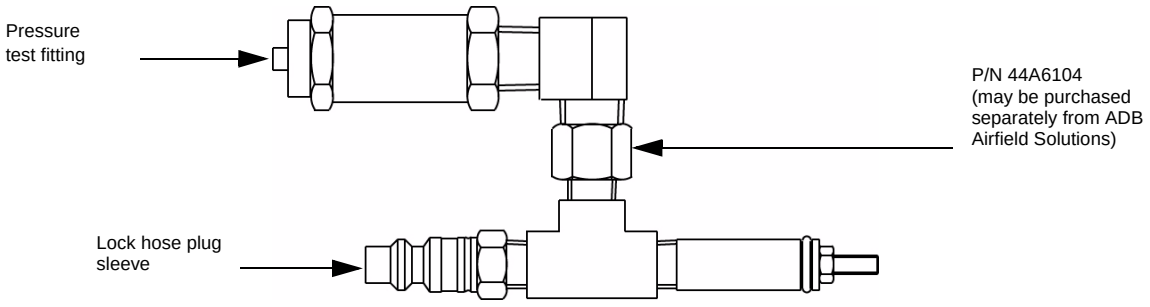
High pressure may cause the fixture to explode causing damage to fixture, personal injury, or death.

Always test for leaks after opening the fixture for any reason. To perform this test:

Figure 14:



1. Remove pressure release screw (E11), see Figure 14.
2. Screw the pressure test fitting hand-tight into the pressure relief port (see figure below). The relief port is the opening created when the pressure release screw is removed.
3. Attach an air line to the lock hose plug sleeve, shown below.
4. Pressurize to 20 psi maximum.
5. Submerge the fixture in a bucket or tank filled with water. Check for air bubbles, which would indicate a leak.



6. Locate the leak source, depressurize, replace the leaky seal or part, reassemble and repeat the test.
7. If the leak is fixed, depressurize and reinstall the pressure release screw.

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2.5.5.3 Retorquing Mounting Bolts

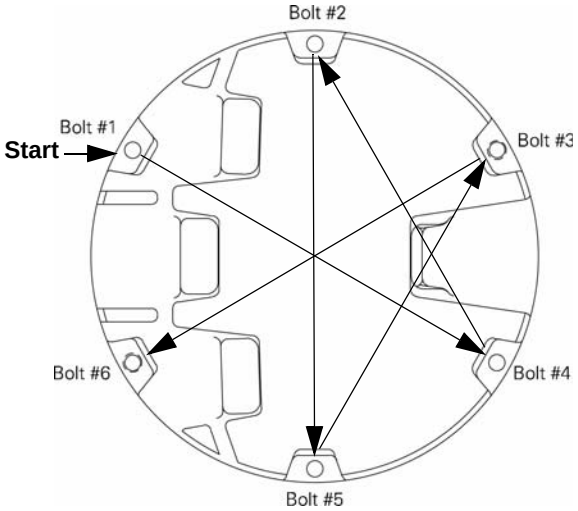
When retorquing mounting bolts, apply one drop of Grade AV Loctite to each of the six 3.8-inch (9.525-mm) diameter mounting bolts. Torque the bolts to 185 ±5 inch-pounds (20.902 ± 0.565 N•m). Torque the bolts in opposite pairs.

See Figure 15. To torque the outer bolts in a star pattern, tighten bolts in noted sequence: #1 and #4, then #2 and #5, then #3 and #6.

NOTE: Applying more than one drop of Loctite to the screw and bolt threads will create future difficulty in removal of the bolts. If lubricant is used on the bolts, contact the base can manufacturer for recommended torque values.

After several fixture maintenance cycles, threaded holes may accumulate with dirt and excessive Loctite. If this occurs, screws may not seat properly. Clean holes with light weight oil or diesel fuel using a small fiber brush. Wipe the holes clean with alcohol to remove all oil or diesel fuel and dirt. Clean with dry, oil-free, low-pressure air.

Figure 15: Sequence for Torquing Mounting Bolts



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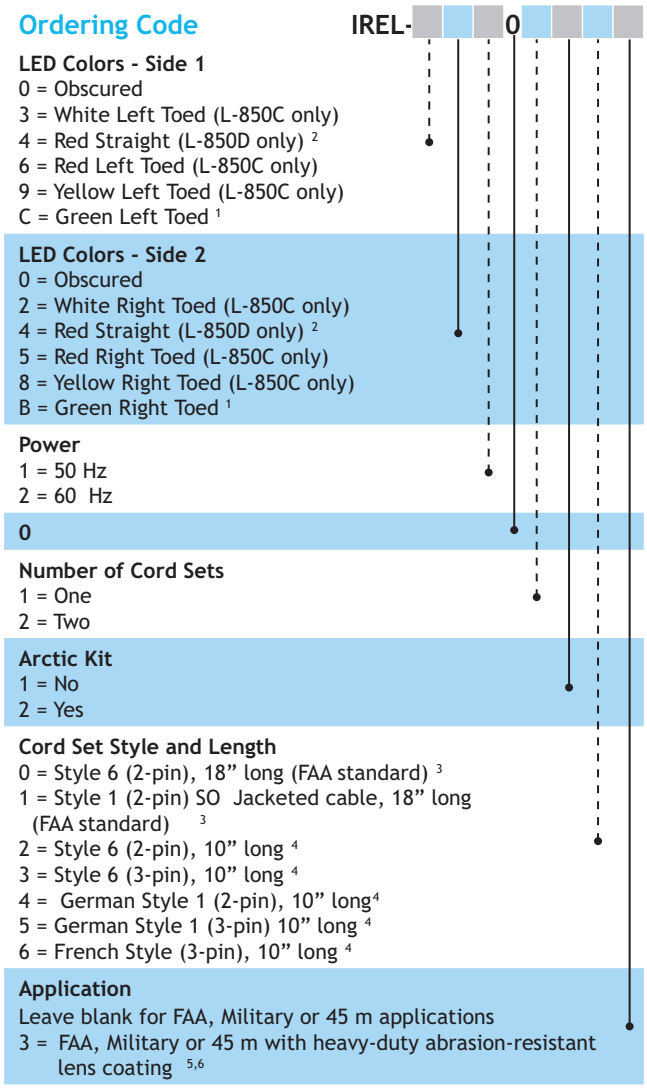
2.6 Parts

Figure 16: IREL Ordering Code


Ordering Code
IREL-
0
LED Colors - Side 1
0 = Obscured
3 = White Left Toed (L-850C only)
4 = Red Straight (L-850D only) 2
6 = Red Left Toed (L-850C only)
9 = Yellow Left Toed (L-850C only)
C = Green Left Toed 1
LED Colors - Side 2
0 = Obscured
2 = White Right Toed (L-850C only)
4 = Red Straight (L-850D only) 2
5 = Red Right Toed (L-850C only)
8 = Yellow Right Toed (L-850C only)
B = Green Right Toed 1
Power
1 = 50 Hz
2 = 60 Hz
0
Number of Cord Sets
1 = One
2 = Two
Arctic Kit
1 = No
2 = Yes
Cord Set Style and Length
0 = Style 6 (2-pin), 18” long (FAA standard) 3
1 = Style 1 (2-pin) SO Jacketed cable, 18” long (FAA standard) 3
2 = Style 6 (2-pin), 10” long 4
3 = Style 6 (3-pin), 10” long 4
4 = German Style 1 (2-pin), 10” long4
5 = German Style 1 (3-pin) 10” long 4
6 = French Style (3-pin), 10” long 4
Application
Leave blank for FAA, Military or 45 m applications
3 = FAA, Military or 45 m with heavy-duty abrasion-resistant lens coating 5,6

Notes

- ETL Certified for the following L-850D configurations: IREL-C4X0XX0, IREL-4BX0XX0, IREL-C0X0XX0, IREL-40X0XX0, IREL-0BX0XX0, and IREL-44X0XX0.

[1] Green complies with only FAA photometric requirements.

[2] Red runway end complies with FAA/ICAO/TP312 photometric requirements.

[3] Fixtures with 18” cord sets are for installation on deep base cans and are not supplied with an external o-ring gasket.

[4] Fixtures with 10” cord sets are for installation on shallow bases and are supplied with an external o-ring gasket.

[5] Typically used for intensive winter service where sand is applied to runways and rotating brushes are used.

[6] Not ETL Certified.

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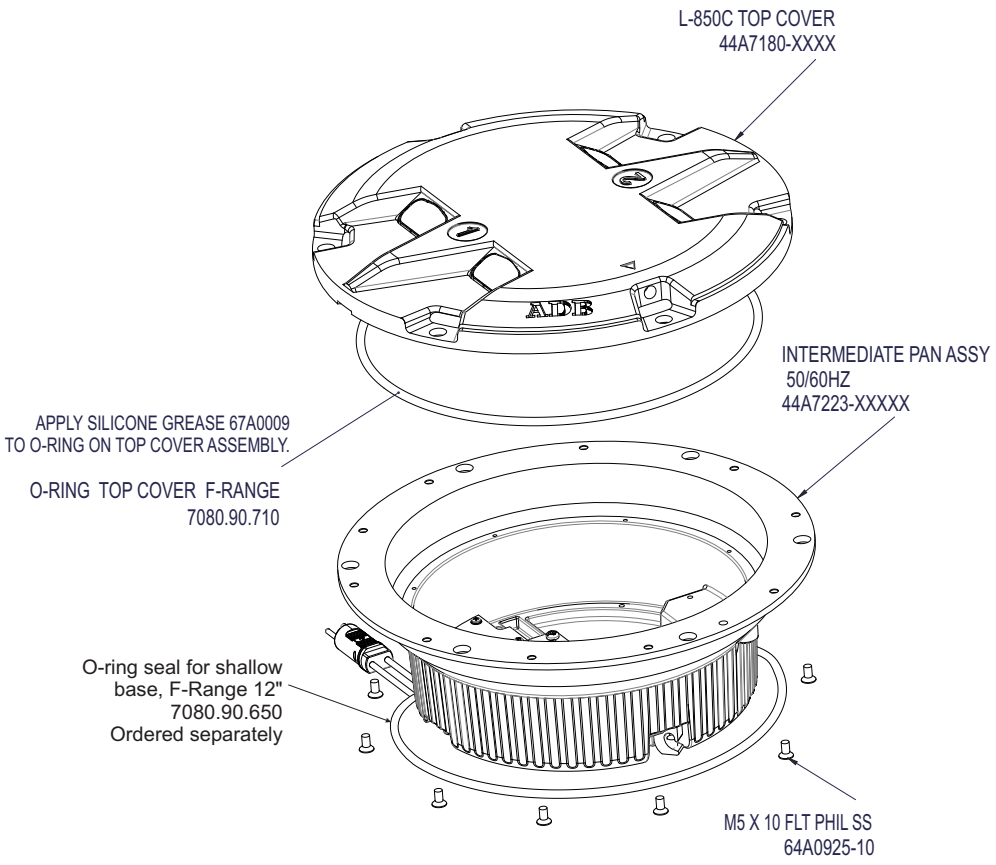
Figure 17: IREL Parts



2.6.1 IREL Components

Description	Part No.
Cable Clamp	4072.42.380
Cord set 18” (FAA)	4072.42.351
Cord set 10” (ICAO)	4072.24.950
LED light engine, L-850C(L), white	48A0431-WHT[1]
LED light engine, L-850C(L) and L-850D(L), red	48A0431-RED[1]
LED light engine, L-850C(L), yellow	48A0431-YEL[1]
LED light engine, L-850C(L) and L-850D(L), green	48A0431-GRN[1]
LED PCB Assembly dual driver	44A7228-00201
LED PCB Assembly single driver	44A7228-00101
Lens	4072.18.336
Lens retainer plate	4072.18.350
Lens seal	4072.18.362
Lens retainer seal	4072.18.380
O-Ring, pressure release screw	63B0267-011
O-Ring, top cover	7080.90.710
Pressure release screw	60A2602
Bar Lifting Tool	1411.19.550
Set of spare anchor hooks for lifting tool 1411.19.550	1411.19.560
O-ring seal between top cover and shallow base, for F-Range 12"	7080.90.650

[1] Must replace both light engines on the same side at the same time. (Quantity. 2 needed)

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2.6.2 Optional Snow Plow Ring

Depending on installation method and snow plowing technique used, a snow plow ring may be necessary. Snow plow rings are available for either standard or stainless steel adjustable Size B L-868 cans. Contact the ADB Sales Department for additional details.

Figure 18: Top Cover Assembly

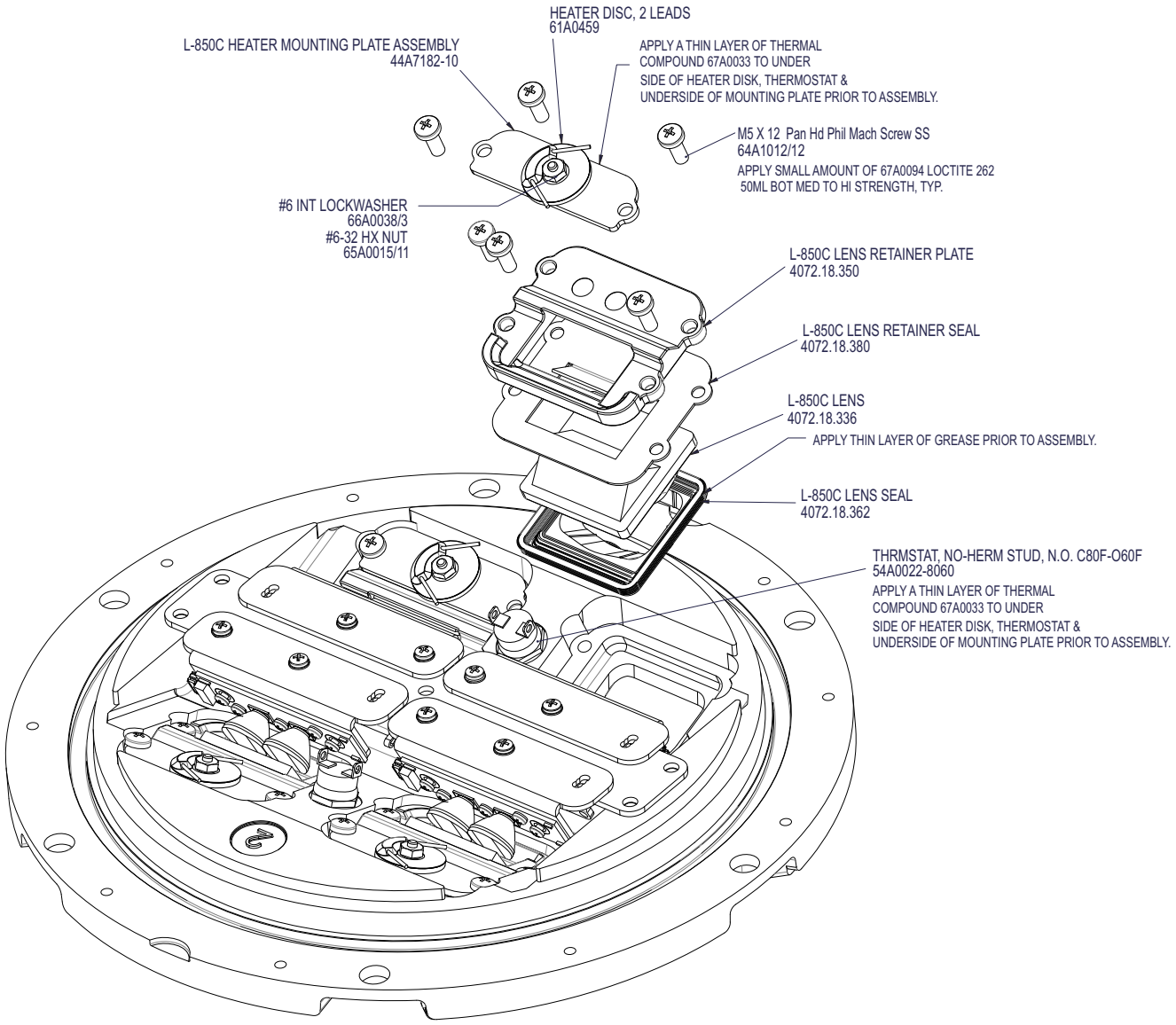
HEATER DISC, 2 LEADS
61A0459
L-850C HEATER MOUNTING PLATE ASSEMBLY
44A7182-10
APPLY A THIN LAYER OF THERMAL COMPOUND 67A0033 TO UNDER SIDE OF HEATER DISK, THERMOSTAT & UNDERSIDE OF MOUNTING PLATE PRIOR TO ASSEMBLY.
M5 X 12 Pan Hd Phil Mach Screw SS
64A1012/12
APPLY SMALL AMOUNT OF 67A0094 LOCTITE 262 50ML BOT MED TO HI STRENGTH, TYP.
#6 INT LOCKWASHER
66A0038/3
#6-32 HX NUT
65A0015/11
L-850C LENS RETAINER PLATE
4072.18.350
L-850C LENS RETAINER SEAL
4072.18.380
L-850C LENS
4072.18.336
APPLY THIN LAYER OF GREASE PRIOR TO ASSEMBLY.
L-850C LENS SEAL
4072.18.362
THRMSTAT, NO-HERM STUD, N.O. C80F-O60F
54A0022-8060
APPLY A THIN LAYER OF THERMAL COMPOUND 67A0033 TO UNDER SIDE OF HEATER DISK, THERMOSTAT & UNDERSIDE OF MOUNTING PLATE PRIOR TO ASSEMBLY.

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Figure 19: IREL Towing

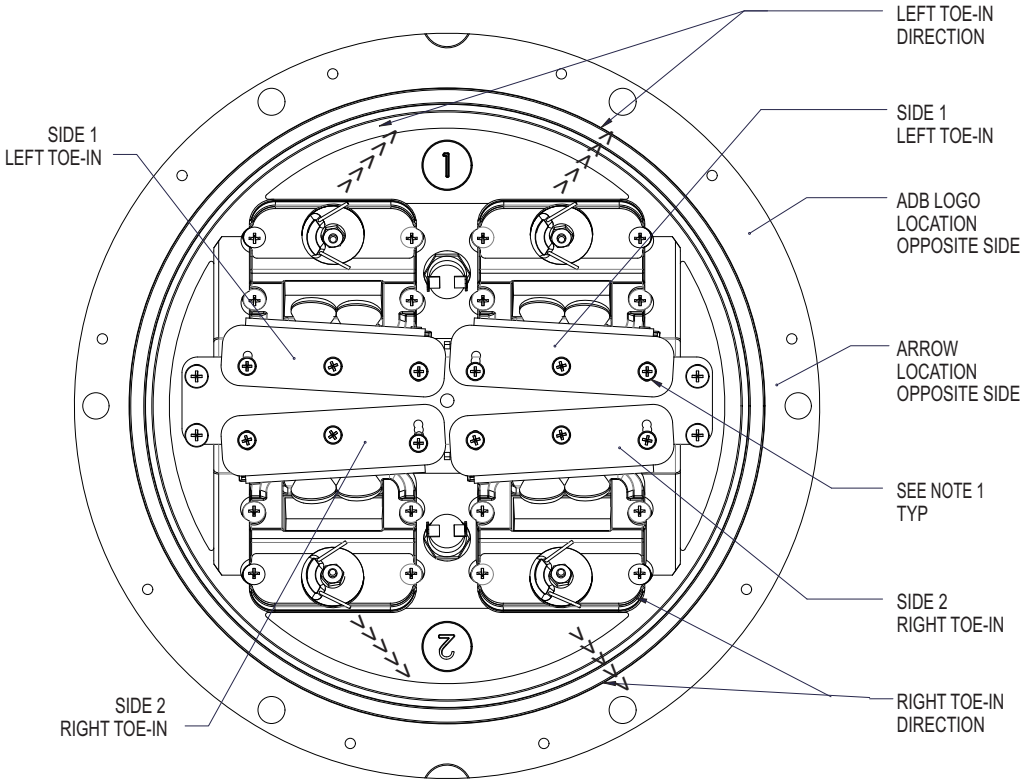

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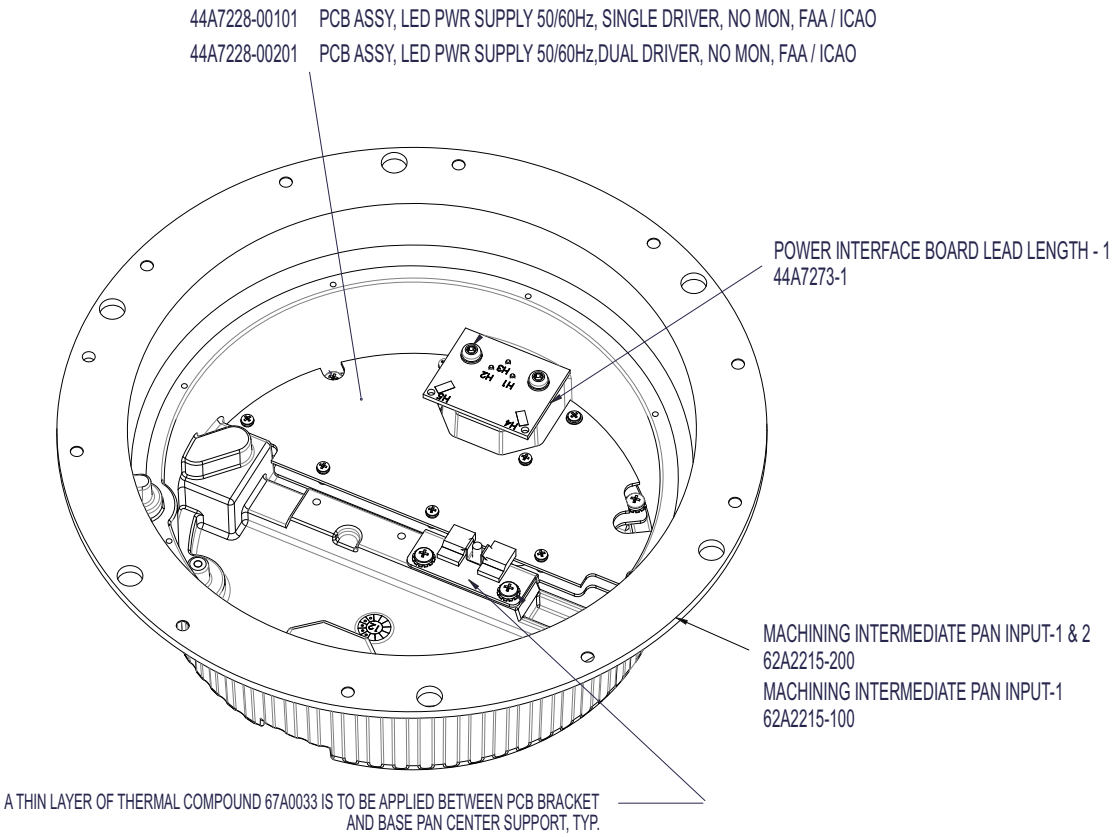
Figure 20: IREL Base


44A7228-00101 PCB ASSY, LED PWR SUPPLY 50/60Hz, SINGLE DRIVER, NO MON, FAA / ICAO
44A7228-00201 PCB ASSY, LED PWR SUPPLY 50/60Hz,DUAL DRIVER, NO MON, FAA / ICAO
POWER INTERFACE BOARD LEAD LENGTH - 1
44A7273-1
MACHINING INTERMEDIATE PAN INPUT-1 & 2
62A2215-200
MACHINING INTERMEDIATE PAN INPUT-1
62A2215-100
A THIN LAYER OF THERMAL COMPOUND 67A0033 IS TO BE APPLIED BETWEEN PCB BRACKET AND BASE PAN CENTER SUPPORT, TYP.

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